



TRUCK DIESEL

FUEL SHORTAGES IN ALBERTA

AND HOW TO FIX THEM

Prepared by
**Transportation
Committee**

JUNE 2011

A E DA
ALBERTA ECONOMIC DEVELOPMENT AUTHORITY

THE SITUATION

Alberta is blessed with a rich endowment of natural resources, chief among them crude oil, natural gas, and vast deposits in the oil sands.

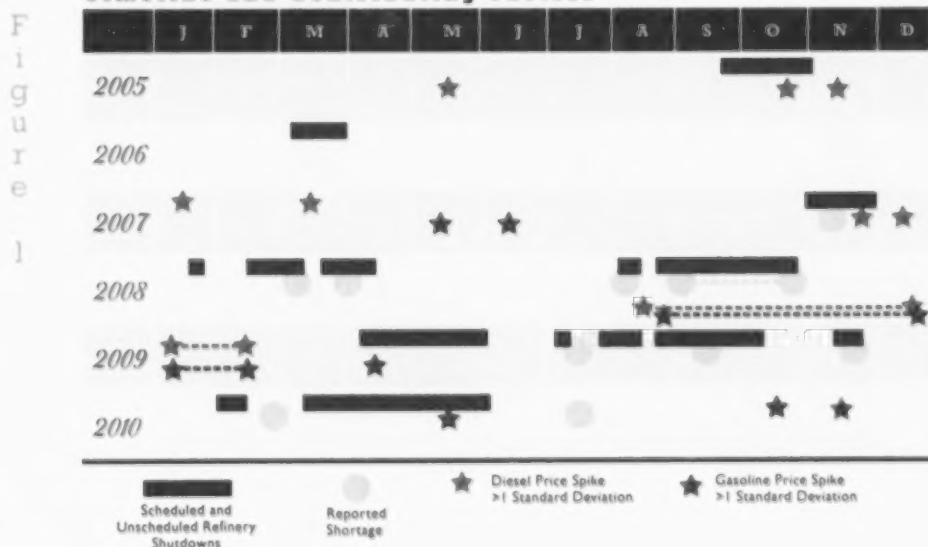
The transition from conventional crude oil production and processing to the new bitumen reality offers a variety of production options. These options will always include upgrading bitumen to synthetic crude oil (SCO), for use as a refinery feedstock or as a diluent for unprocessed bitumen.

The Edmonton area's three large refineries (Imperial, Suncor and Shell) constitute the great majority of capacity in the province, and they rely on SCO for some three-quarters of their feedstock. Before 2009, only three upgrader complexes (Suncor and Syncrude in the Fort McMurray area, and Athabasca Oil Sands Project (AOSP) in Fort Saskatchewan) were able to supply SCO to the province's core refining hub.

Periodic operational difficulties at upgraders, including more than twenty unscheduled upgrader outages since 2005, have adversely affected SCO and associated diesel production. These production disruptions have, in turn, affected Edmonton downstream refinery operations.

A series of planned and unplanned refinery capacity outages at Edmonton-area refineries, which occurred from 2005 to 2010 also contributed to fuel supply difficulties. Other events in the fuel supply chain included bitumen mining equipment problems and pipeline capacity shortages.

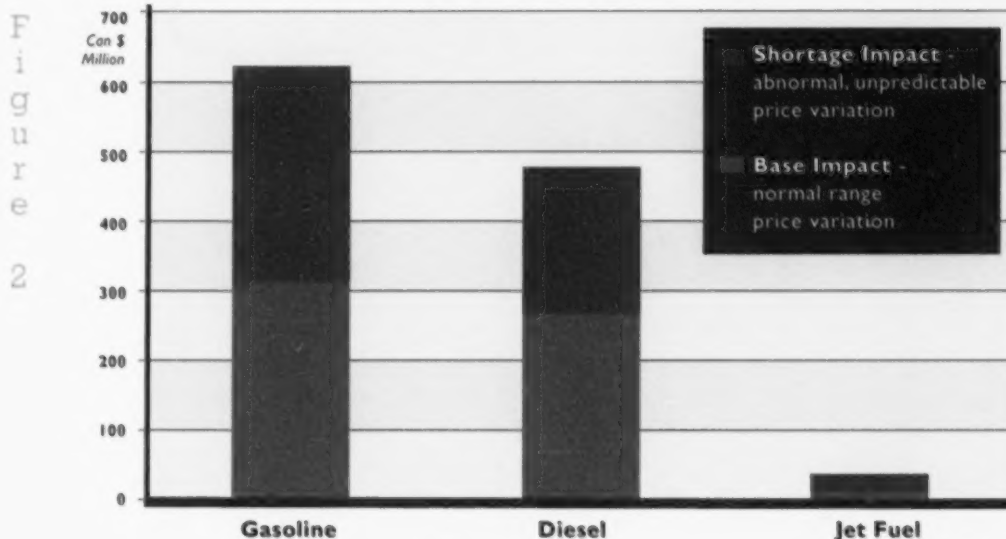
**Alberta Fuel Shortages
Timeline and Contributing Factors**



Taken together, these capacity outages have led to a series of fuel shortages in the province, particularly for diesel and gasoline, which caused reduced efficiencies and higher costs for fuel users.

The economic cost impact of these fuel shortages exceeded one billion dollars. Larger fuel users were able to pass some portion of these shortage-induced fuel price premiums to their customers through fuel-adjustment clauses, while smaller businesses and private consumers shouldered the added cost burden entirely.

Direct Price Impacts of Alberta's Most Significant Fuel Shortage AUGUST 2008 - FEBRUARY 2009



Source: Mancreiff Consulting

Certain steps have been taken by the oil industry in recent months to recognize, if not address, the issues described above. However, it is too soon to determine whether these actions can neutralize the recurrence of shortages in the future.

In this analysis, we offer recommendations for additional steps to improve Alberta's security of fuel supply, and to minimize the prospect of future structural supply difficulties in the province.

THE SOLUTIONS

What Should Be Done?

AEDA's recommendations for improving fuel supply security in Alberta address three principal topics:

1. Improving Operational Reliability in the Fuel Supply Chain,
2. Maintaining Adequate Operating Fuel Inventories, and
3. Encouraging New Sources of Refined Products Supply.

1. Improving Operational Reliability in the Fuel Supply Chain

Some fuel suppliers have recognized that capacity downtime within their fuel supply chain has been unacceptable and yields competitive advantage to others. The details of prospective changes to operational reliability programs within the downstream oil industry are unknown. Acknowledgment by refiners that past performance has been less than optimal offers some prospect that their new "reliability programs" will address consumer concerns.

Frequency, scheduling, and duration of planned maintenance shutdowns at the province's upgraders and refineries is a related aspect of operational reliability. Because of Alberta's climate, the complexity and long duration of (at least upgrader) maintenance turnarounds, and the short-term pressures these activities place on demand for skilled labour, it is essential to have effective coordination of major maintenance activities in the province.

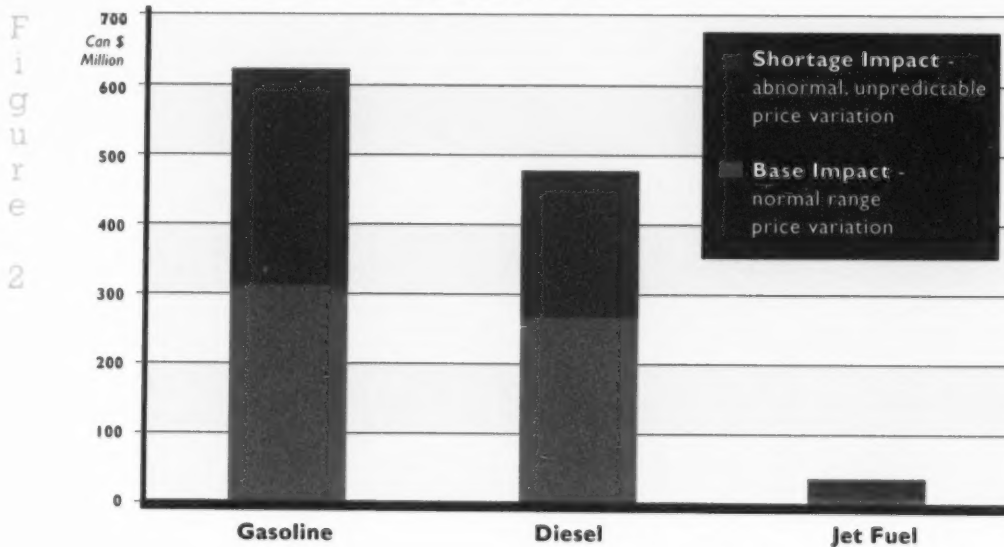
The private sector has taken partial steps to address this concern.

AEDA recommends that Government encourage implementation of a comprehensive industry-managed program to include an all-inclusive exchange of industry downstream capacity maintenance schedules.

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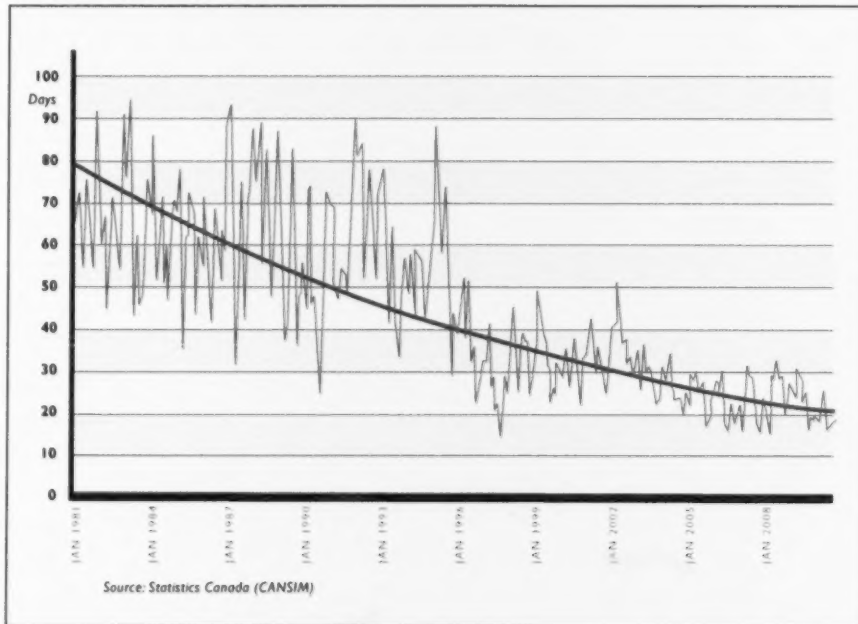
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2. Maintaining Adequate Operating Fuel Inventories

Falling inventories of petroleum products stored by bulk fuel suppliers at upgraders, refineries and bulk terminals in the province have occurred throughout the past twenty years. Meanwhile, provincial consumption has doubled. In the case of diesel, in particular, inventory levels have fallen from some 80 days of consumption in 1981 to 20 days today.

Alberta's Days of Diesel Consumption

End-Month Stocks 1981-2010



Fuel suppliers must manage working capital costs in the face of ever-rising crude oil prices. However, it is self-defeating to permit inventories to fall below levels which maintain a reasonable cushion against prospective supply interruptions.

The export-oriented nature of Alberta's petroleum logistics systems means that its fuel users are isolated from alternative supply sources, and Alberta is singularly ill-prepared for the occasional circumstance in which it must become a fuel importer.

AEDA recommends that Government work with oil industry bulk suppliers to increase target operating inventories of transportation fuels to 30 days for gasoline and diesel, and 25 days for jet fuel.

The added costs of maintaining such higher operating inventories, estimated at less than one cent/litre, are minor since adequate fuel storage capacity already exists within the province. This nominal additional cost, which fuel suppliers may pass on to their customers, is lower than that which fuel users might incur to provide their own supply security.

3. Encouraging New Sources of Refined Products Supply

Demand for transportation fuels in Alberta is positively correlated with oil price movements. As a result, continuing growth in real oil prices, and of investment in the oil sands, will lead to higher demand for petroleum products. Demand will grow most rapidly in Alberta, but consumption in the surrounding provinces of Western Canada, traditionally supplied in large measure from the refineries of the Edmonton area, will also increase.

This demand growth will continue to put added strain on transportation fuels supply systems unless new sources of supply are added. Though imports from the U.S. West Coast and Mid-West can be effective competition at the fringes of the Western Canadian market, consumption within, and proximate to, Alberta is generally most efficiently supplied from local sources.

No significant refinery expansions have occurred within Alberta in the past decade, and none are planned. Absent refinery capacity growth, bitumen upgraders are a secondary source, though they only produce diesel (and only two of the present six upgraders in operation produce any fuel other than SCO).

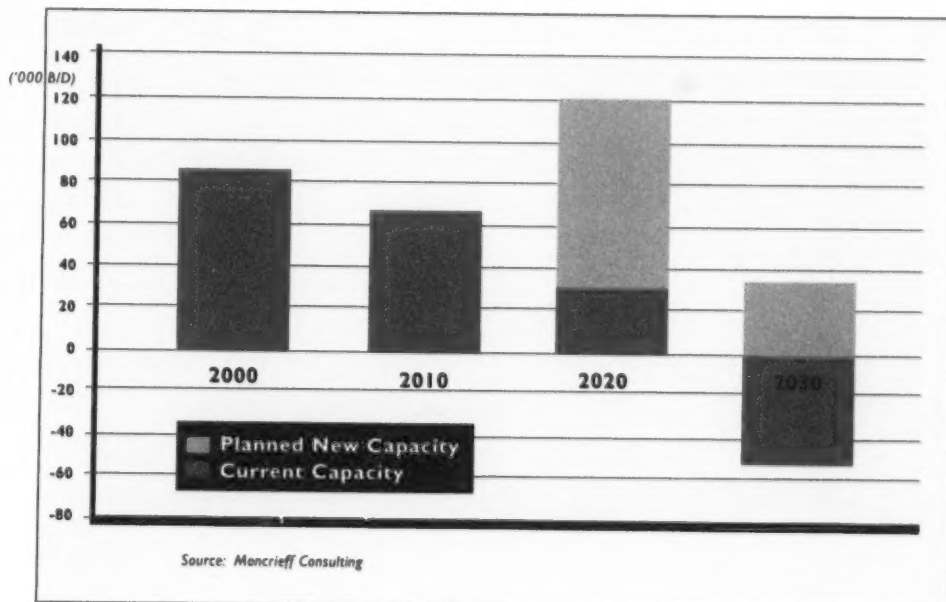
Two major upgraders are now at advanced stages of planning:

1. The 150,000 B/D CNRL/North West project at Redwater, based in part on the province's bitumen royalty in-kind (BRIK) program, the first phase of which could start-up as early as 2014, and
2. The 200,000 B/D Suncor/Total Voyageur project at Fort McMurray.

Both projects plan to produce diesel fuel and, in the case of the CNRL/NW project, the primary output is diesel.

Alberta Diesel Net Surplus/Deficits (High Case)
2000 - 2030

Figure 4



At full capacity, these two projects could produce more than 100,000 B/D of diesel, sufficient to restore balance in Western Canadian diesel supply and demand, and satisfy projected demand growth, for at least the next ten years – not a long time considering the planning and construction cycle of this industry.

New supplies of refined products are likely to be required beyond 2020, particularly since growth in gasoline and jet fuel consumption cannot be supplied from upgraders.

AEDA recommends that the Alberta Government consider providing support and encouragement to investors in new fuel production, through additional pledges of BRIK entitlements and potentially processing agreements.

T H E S O L U T I O N S

Who Should Take the Lead?

Three major groups are affected by fuel supply security concerns:

- Bulk fuel suppliers
- Fuel consumers, and
- Government

AEDA believes that the most efficient solutions for improving fuel supply security in Alberta are those which can be implemented by primary fuel suppliers in the province (principally refiners, wholesale distributors and bulk marketers).

Primary fuel suppliers have both the operating know-how, and scale, to put in place most cost-effectively programs to improve supply security. Consumers in general, unless of very large scale, will find it better to pay a nominal premium for enhanced security rather than invest to achieve the same goals.

The unit costs of improved security are relatively small, and can result in improved supplier reliability and possibly lead to lower overall consumer prices due to the avoidance of shortage-induced price spikes.

AEDA recommends that the Alberta Government encourage bulk fuel suppliers to take steps to improve supply security and to monitor progress. More active steps within downstream operations may be necessary if fuel shortages continue.

S U M M A R Y

- Diesel, gasoline and aviation fuel shortages in Alberta have had measurable economic consequences.
- Even with expected production expansion, shortages are likely in future as demand grows.
- Expanded fuel inventory means greater supply security for users.
- Cost to increase inventory is minimal.
- Lack of action increases economic risk for Alberta.

Acknowledgement & Thanks

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